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ABSTRACT

Designed as a forum for the exchange of ideas among professionals involved in community college research and planning, this journal contains a series of articles concerned with institutional research and research-related topics. The following articles are presented: (1) "The Importance of Time," by Arthur M. Cohen, which discusses the significance of time dimensions in determining the utilization of research; (2) "A Look at Participation Rates Based on the 1980 Census," by Lawrence A. Nespoli and Susan K. Radcliffe, which shows how institutions can use census data as a source of improved information for internal and external purposes; (3) "Discriminant Analysis Applied to Basic Skills Programs," by Richard G. Dumont and James T. Jones, which focuses on a study of the use of discriminant analysis to identify the characteristics associated with students who benefit from remedial education and those who do not; (4) "A Study of the Correlation of Selected Data on High School Transcripts, English Qualifying Examination Scores, and Subsequent Freshman/Developmental English Grades at Wytheville Community College," by Jerry R. Beavers; and (5) "American Association of Community and Junior Colleges Report: Occupational Education Enrollments," by Rosemary Wohlers, which offers nationwide data on program enrollments. Additional articles by Beverly Horne, Darrel Clowes, Jim Palmer, and the staff of the ERIC Clearinghouse for Junior Colleges review research studies, literature for researchers, and ERIC documents. (LAL)

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COMMUNITY COLLEGE JOURNAL FOR RESEARCH AND PLANNING

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THE PRESIDENT'S FORUM:
The Importance of Time

Arthur M. Cohen, President NCRP, 1983-84

NCRP's major functions are to assist institutional research practitioners in sharing ideas for studies and to help them professionalize their field. The ERIC Clearinghouse for Junior Colleges is a component in the sharing of studies. Its files serve as an archive for IR reports emanating from colleges across the country. The ERIC indexes and abstracts ensure that pertinent reports are easy to find. This journal and the *Community Junior College Quarterly of Research and Practice* are leaders in publishing the reports. Hence, there is no reason for IR directors to function in isolation from their counterparts elsewhere.

An interesting perspective on what institutional researchers actually study is provided by Gold, who offered a 35-year review of institutional research at Los Angeles City College. He commented on the patterns of research questions, questions which tended to center on enrollments, student characteristics, remedial programs, and student follow-up studies with particular emphasis on the success of those who transferred to universities. But he also mentioned how other research studies were **characteristic** of the times. Testing and placement were important around 1960, when there was a surge of students; in the mid-1960s evaluation of remedial programs came to the fore; and in the late 60s the research office studied campus unrest. During the 1970s several studies of "special" or "new" populations were undertaken. In summary, several of the research topics were considered continually through the decades while others focused on topics of momentary concern.

Although the status of the institutional research office has been debated over the years, it has never been resolved. A monograph published by the ERIC Clearinghouse in 1968 defined some of the issues. Are the IR directors to act merely as respondents to surveys? Are they merely to be fact-finders for the president ("here's what I want to say. Get me some data to support it.")? Is the IR director a statistician and research designer accessible to the entire staff? Little has changed in 15 years. The role is rarely defined and it is not likely to become well-defined. The only thing certain about institutional research in the community colleges is that each year finds fewer people with the title "Director of Institutional Research." The function seems to have peaked in the 1960s.

Questions of status and professionalism are debated at the regional and national meetings of NCRP. Hardly a session goes by without some comment on the importance of institutional research and with accompanying plaints that few policy-makers attend to the information provided them by their own IR staff.

The pages of this journal also have carried notes on professionalism. The Spring 1982 issue included a President's Forum column on enhancing the status of IR. In that article Kathryne Baratta-Wilders offered 19 suggestions for "improving the status of Institutional Research within an institution. Her recommendations, ranging from avoiding errors in the tables to writing intelligible reports, should be framed and hung on the wall in every research office.

What should be studied? Time is an important element. Some studies must respond to concerns of the moment. But others need to be done in time series so that an institutional memory is fostered. These are the continuing studies of the success of transfer students, the propensities of incoming students, the successes and failures of continuing curriculum, the periodic repeated evaluation of programs.

Another set of continuing studies should be based in past and future time. These are the analyses of trends in enrollment, support, demography — all the issues that go into long-range planning. Most of the staff members are concerned with issues of the day; the institutional research directors must try to turn their attention to longer-range concerns.

Many examples of long-term studies show up in the ERIC system. Enrollment projections are frequently seen; a recent study done by Quinley at Harford Community College (Maryland) affords a good example of the type (ED 223 305). Community needs assessments that consider the college-going rates of students in the local junior high and high schools are an important adjunct to enrollment projections. Waddell and Hunt provide an example with their study for the Cochise County Community College District (Arizona) (ED 223 298). And Campbell and others provide an enrollment projection study at Montgomery Community College (Maryland) (ED 223 320).

Other types of studies with past and present time dimensions include those which project changes in revenues and expenditures. One such study was done at Yavapai College (Arizona) with the author showing how a computer model could simulate changes in characteristics of the institution based on variables affecting revenue and expenditure limits (ED 225 605). And Caldwell Community College's (North Carolina) Office of Research and Planning provided an example of a long-range plan effected through a 10-year cycle of planning efforts using objectives and specific target dates (ED 224 530).

Research officers are in a unique position to take the long view but they must not await directives from their supervisors. Few presidents have research backgrounds; few understand the power of projection models. The research directors must, at a minimum, employ such models and bring the data to the attention of their senior staff. But they should go a step further and in their reports discuss probable implications of their projection studies. It is true that the institutions' managers come first in proposing the types of studies that the research directors should do but sometimes the directors must help them see the forest through the trees.

As an example of the latter point, in one large community college district recently the research directors tracked staff demography and found that 20 percent of the faculty were 61 years of age or older. The data were included in a report of "staff and student characteristics." How much more powerful might that report have been if the research officer had singled out that dimension of faculty age and had suggested that the entire staff consider procedures for replacing that sizable group of people who would undoubtedly be retiring shortly? To leave such important data buried in the tables of a lenghthy report is to do only half a job.

The lot of the IR directors in community colleges is not easy. Their status is not clear. Their functions seem increasingly to be assigned to people with several additional responsibilities; a return to the time when institutional research was housed in the office of the director of student affairs or when it was "everyone's responsibility" (thereby ensuring that no one was doing it). However, the existence of this Council, the Clearinghouse, and the journals that are devoted to institutional research in community colleges suggests that the function survives. Its dedicated practitioners may yet see it come to the fore as a key component in institutional planning.

A Look at Participation Rates Based on the 1980 Census

Lawrence A. Nespoli and Susan K. Radcliffe

> "He who lacks good information in these data oriented times is seriously handicapped. . .How do we get better information for decision making and how do we make this information available to policy makers?" (Gleazer, 1980)

This statement and related question confirm what community college researchers have known for some time. We need good information and we need it for two purposes: (1) to improve decision making at the institutional level and (2) to more effectively make our case to policy makers at the local, state, and national levels.

The importance of accurate and timely information for effective decision making was highlighted recently in a *New Directions for Community Colleges* volume sponsored by NCRP (Mehallis, 1981). The issue provides hard evidence that institutional decision making is only as good as the information on which it is based. In short, quality decisions require quality information and information systems.

More recently we have heard from several quarters about the need to be more accountable to our many publics through better information. S. V. Martorana (1983), in a recent article urged that "state and federal law makers must hear from the colleges." Similarly, Frank Mensel (1983), suggested that community colleges must "document their mission through hard facts." This theme is certainly not a new one. However, it is one that will take on growing importance in the mid 1980s and beyond as community colleges jockey for position with other postsecondary institutions in an environment of discouraging demographics and limited resources.

With this wider perspective in mind, this article will show how 1980 census data can be used to provide new and improved information for internal consumption and external use. We will first present some brief background information on the 1980 Census, next discuss methodology, then present results for one institutional setting, and finally sketch some concluding thoughts on possible implications for the wider postsecondary community.

The 1980 Census

The 1980 Census provides a wealth of information on the United States population. Data have been made available to the public by the Census Bureau in several segments on computer tape. Summary tape file 1-A, for example, provides the primary data on the complete count of the U.S. population including such items as sex, race, age, marital status, household type, etc.

In Maryland, as in other states, much of the census information has been made more accessible to the public and to institutions through the work of various state and regional organizations.* These organizations provide publications, computer printouts, microfiche blowbacks, and newsletters based on their analyses of summary tape file 1-A. Their efforts make it possible for small institutions to conduct research studies based on the census data without major investments in computer software and programmer time.

In short, the census data properly used will provide clear and hard data on the populations a community college is serving. For example, a college will be able to talk in a very precise way about the geographic distribution of its students within its service area — that is, what percentage of its students come from different parts of the service area. By cutting the data a different way, a college can also look at "participation rates" for census tracts and groupings of census tracts within its service area — that is, what percentage of the people residing in these different areas actually attend the College. Then by adding variables such as race, sex, and age to the analysis, a comparison of the participation rates of various demographic groups is also possible.

Methodology

An unduplicated file of all credit students attending Howard Community College during the 1980 calendar year was made from the College's student data base. The file contained the name, mailing address, race, sex, and age of all credit students. Using available census software (GBF Dime File), each address from the file was matched to a census tract. Of the original 4,685 credit students in the College file, 390 were identified as having addresses outside of Howard County and 282 were in Howard County but could not be placed in census tracts. Thus, nearly 95 percent of the students from the College's sponsoring county were successfully matched and placed in tracts. This is a technique and method quite similar to one used by Hal Corson (1981) at Miami-Data Community College and also Bill Campbell (1981 and 1983) at Montgomery College in Maryland.

With the match completed, a census tract identifier was added to the College's 1980 unduplicated student file created for the study. This new file of students was then analyzed for geographical distribution by planning districts within the county by age, sex, and race, and compared to the county population in the same categories. The actual analysis of the data was accomplished on the College's Hewlett Packard 3000 minicomputer through use of the Statistical Package for the Social Sciences (SPSS).

*The Maryland State Data Center, the Baltimore Regional Planning Council, and the Howard County Office of Planning and Zoning all provided assistance to the authors in conducting this study.

The study also provided an opportunity to pilot test some of the new microcomputer graphics capabilities now on th market. The pie charts and bar graphs that follow were done on an IBM Personal Computer with VisiCorp's VisiPlot software. They could have been done just as well on other microcomputers with similar grahics software.

Findings

Figure 1 is a map of Howard County, Maryland showing the seven regional planning districts of the county and major transportation routes. Each regional planning district is either an aggregate of several census tracts or exactly one tract. The more densely populated a region, the more tracts it contains.

From what parts of its county or its service area does a community college draw its students? Figure 2 shows how precisely that question can be answered by using the census data. With the College's credit student body represented by the total pie, each piece of the pie shows what percentage of the student body comes from different parts of the county. The results for Howard Community College show that proximity to the College is a very important factor in community college attendance. Over half of the College's credit students come from the planning district in which the College is located.

Do certain sections of the county participate in the College's programs at higher levels than others? Figure 2 tells only part of the story in that it does not consider the actual number of people residing in the different areas of the county. A college may get most of its students from a particular part of its service area simply because most of the people reside there. Thus, we also need to look at participation rates by identifying the percentage of each area's population attending the College.

Participation rates can be calculated for the total population within the county (and parts of the county) or for the adult population only. Both are useful statistics but the latter is more interesting to highlight since it is the adult population that represents the potential pool of applicants for a college. Figure 3 shows the results for Howard Community College. Of all county residents 18 years and older, 5.2 percent were enrolled in the College's credit programs in 1980. The participation rate in the different planning districts ranged from a low of just over two percent to a high of seven percent for the district in which the College is located. That kind of information can be put to good use in establishing strategies for program development and outreach programs throughout the county.

What factors account for different participation rates? Do demographics such as age, sex, and race of the population have an impact? Figures 4 through 6 show participation rates for the different planning districts of the county by these key variables. The results are useful in suggesting marketing strategies for specific target groups within the county and particular parts of the county.

The bar graph presented in Figure 4 shows that for Howard Community College, a higher percentage of adult females (6.7 percent) than males (3.7 percent) attend credit courses. That pattern was found to hold for each of the planning districts in the county. For the planning district in which the College is located, nearly one out of ten of the adult females attended credit courses in 1980.

Figure 1:
Howard County

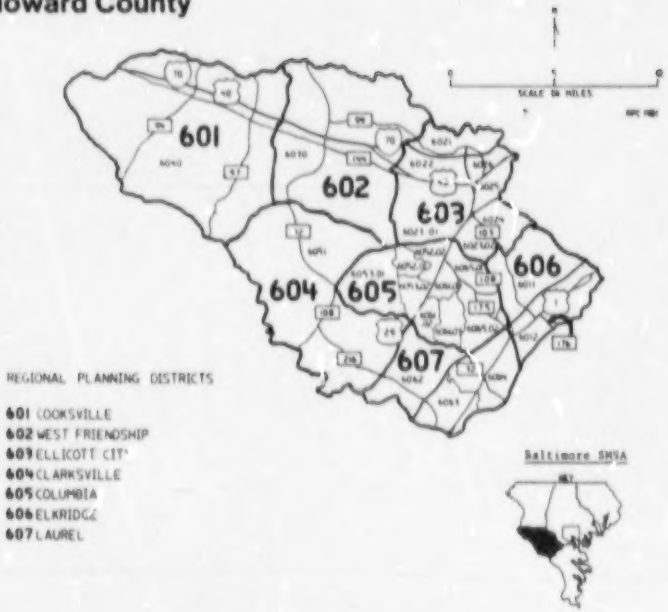
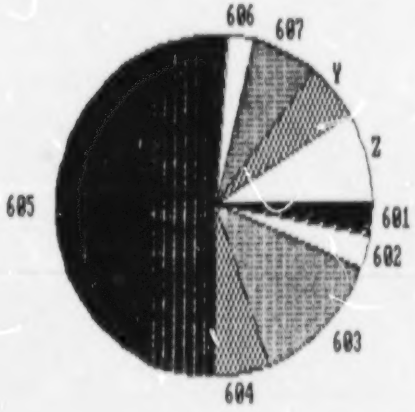


Figure 2:
1980 HCC Credit Students by Region



REGIONAL PLANNING DISTRICTS	% OF HCC
601 Cooksville	2.8
602 W. Friendship	3.3
603 Ellicott City	13.2
604 Clarksville	5.7
605 Columbia	51.3
606 Elkridge	2.7
607 Laurel	6.7
Y Howard C. Unknown	6.0
z Non-Howard County	8.4

Figure 3:
Regional Participation Rates

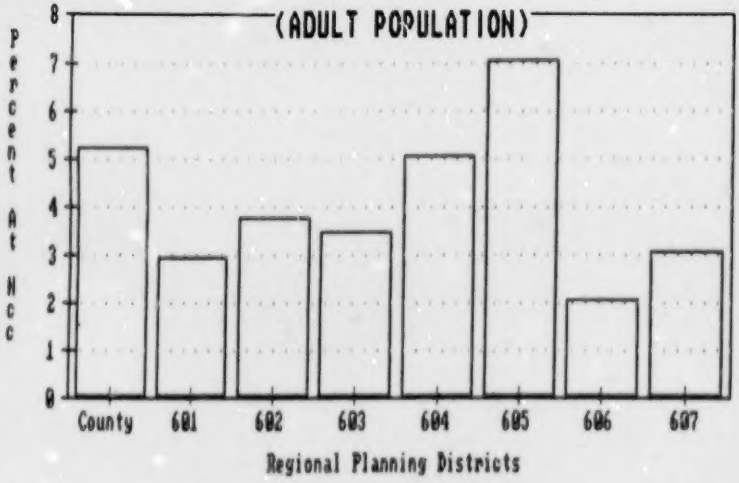


Figure 4:
Regional Participation Rates by Sex

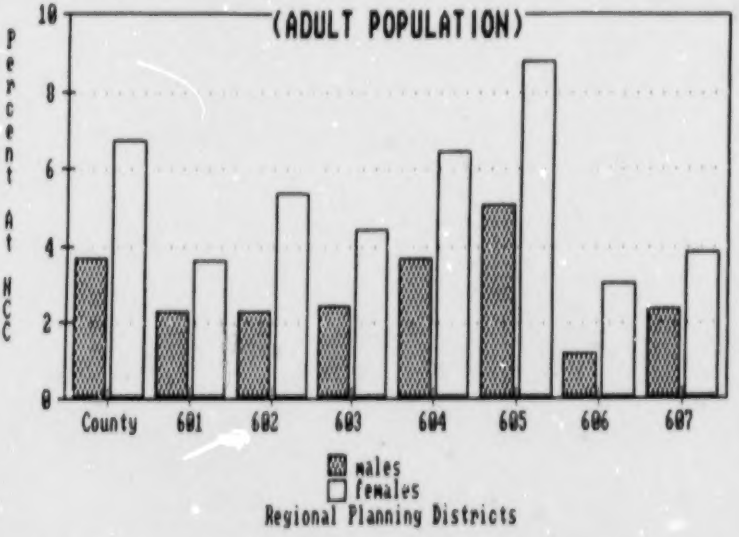


Figure 5:
Regional Participation Rates by Race

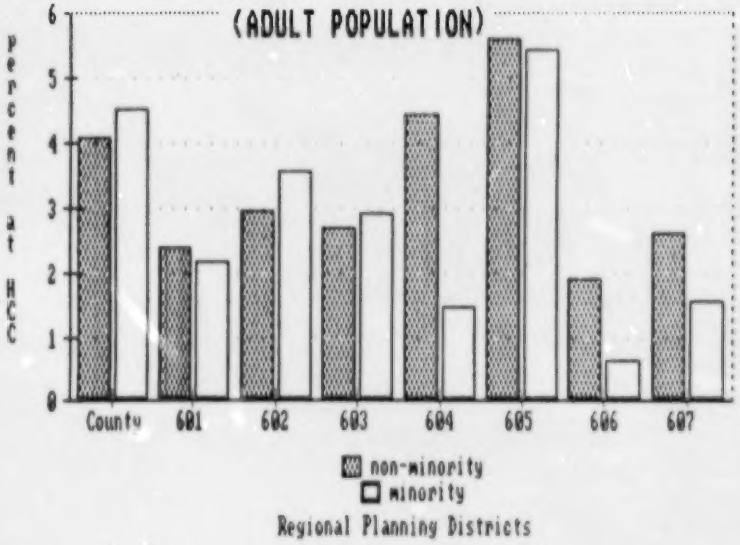


Figure 6:
Regional Participation Rates by Age

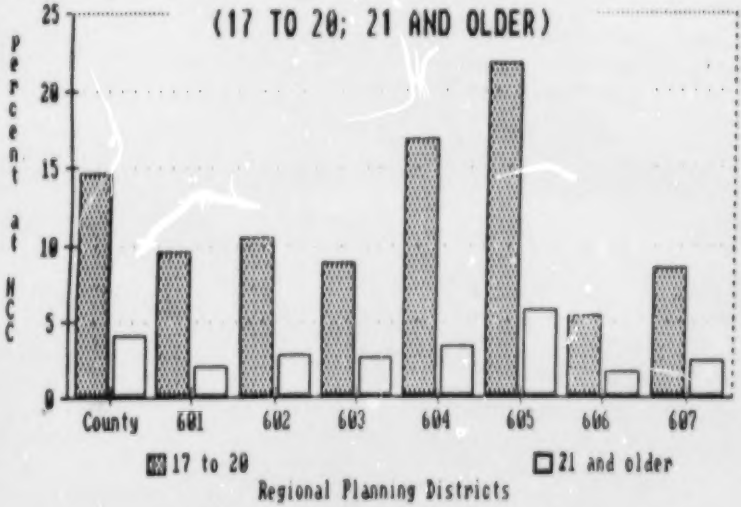


Figure 7:
Howard County
Participation Rates by Census Tract

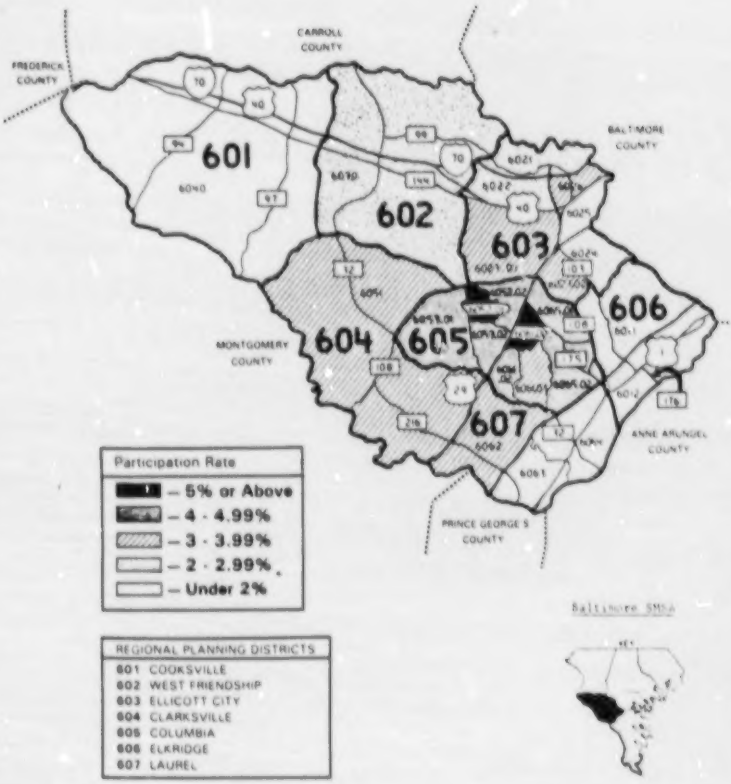


Figure 5 presents a similar participation rate analysis by race. From an affirmative action standpoint the results were positive in that the countywide participation rate for minority adults (4.9 percent) was slightly higher than that for non-minority adults (4.1 percent). However, in four of the seven planning districts minority participation rates are lagging behind non-minority participation rates.

Finally, Figure 6 shows the participation rates of different age groups in the county. As an initial breakdown, we looked at two groups of students: (1) the 17 to 20 year old group which corresponds roughly to the traditional college age for the first two years of college and (2) the 21 and older age group which we have called non-traditional students. Although older students comprise 75 percent of the College's credit population, the actual participation rate of the 17 to 20 year olds throughout the county (14.7 percent) is consistently much higher than that for the older group (4.2 percent). For the planning district in which the College is located, more than one out of five of the traditional age students attended the College's credit programs in 1980.

Concluding Comments

We have sketched here only a few examples of the types of analyses that are possible through use of the census data. The full report presented to faculty and staff at Howard Community College includes family income, educational attainment, and other variables for their possible impact on participation rates. Also, a preliminary analysis was done for census tracts, a smaller geographical division than the planning districts, and is shown in Figure 7.

How is this new information being put to use at Howard Community College? A few applications have already been mentioned — namely, program planning and marketing efforts. Just as importantly, the results have been shared in discussions with county officials, state education policy makers, state legislators, and others. The data show who we are serving in a very precise way and can be particularly effective when compared to available state and/or national data. For example, one useful barameter might be to note that Fall 1980 enrollments in public two-year institutions nationwide represented 2.6 percent of the 1980 adult U.S. population.*

Perhaps most important to the NCRP membership, once the geographic match is made between a college's student data base and the census file, the analyses presented here are easily replicated. Copies of the full report done at Howard Community College are available through ERIC and on request from the College's Research and Planning Office. Furthermore, the authors are eager to assist those who believe this methodology will be useful at their respective institutions.

*The number enrolled in public two-year institutions was 4,328,782 (DIGEST OF EDUCATIONAL STATISTICS, 1982); U.S. population 18 and over was 163,275,000 (U.S. STATISTICAL ABSTRACTS).

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Discriminant Analysis Applied to Basic Skills Programs

Richard G. Dumont and James T. Jones

Introduction and Perspectives

In recent years, tensions between values of quality and equality in American higher education have become increasingly pronounced and pervasive in their effects upon policies being formulated and decisions being made at the national, state and institutional levels. "Project Equality," a nationwide effort sponsored by the College Board, and the Southern Regional Education Board's Task Force Report on Higher Education and the Schools, "The Need for Quality," are but two examples of a growing number of indications that the *quality* vs. *equality* dilemma is becoming a major topic of discussion, argumentation and debate among faculties, administrations, governing boards, and state legislatures and executive offices (Casteen, 1982; SREB, 1981).

One can hardly address this sensitive and potentially explosive topic without confronting simulataneously the closely related issue of the need for or place of remedial education in higher education. For example, the SREB Task Force report considers the challenge of "Finding the most effective setting for remedial studies," and takes the position that, "In the long term, the need for remedial education at the college level should be reduced substantially by measures at elementary and secondary levels to improve student performance" (SREB, 1981, p. 19). The report also includes the formal recommendation that, "The state boards of education and higher education in each state should appoint a joint committee to examine remedial education provided within their state, for the purpose of determining the most effective settings and models to serve the needs of insufficiently prepared high school graduates" (SREB, 1981, p. 19).

The need for finding "solutions" to the "problem" of remedial education becomes particularly urgent when it is recognized that the costs of remediation have risen dramatically in recent years. According to a recent SREB report, "Several states are now collecting cost information on remediation at the college level. California recently completed a study of its public colleges and universities which indicates that expenditures for remediation increased 42 percent in the two year period from 1978-79 to 1980-81. . . At campuses in the California State University System, expenditures rose 97 percent." (SREB, 1983, p. 2)

As the various academic policy and budgetary alternatives are considered in the several political environments, sound and convincing evidence regarding the effectiveness and efficiency of collegiate remedial instruction programs will be sought, and institutional researchers will be among those whose expertise will be directed toward designing and conducting evaluation studies of remedial programs.

Purpose

The purpose of the current research is to apply the statistical technique of discriminant analysis to selected remedial education programs within a statewide system of higher education in the Southeastern United States in an effort to explore that technique's potential for identifying those student characteristics (variables) which "discriminate" between those who are successfully remediated as a result of such programs, and those who are not (discriminant groups).

To the extent that discriminant analysis allows the identification of variables which are related to successful or non-successful remediation, more informed and cost effective policies and decisions regarding such matters as remedial education programming, pedagogical techniques, admissions and advising should result. Unlike the more traditional approaches to evaluation, which entail implementation of a variety of experimental or quasi-experimental designs and which are ordinarily utilized primarily or exclusively for purposes of summative evaluation (Akst and Hecht, 1980; Dumont, Jones, and Bekus, 1982), discriminant analysis would appear to have greater potential for applications in formative evaluations.

Literature Review

Institutional researchers are able to refer to a growing body of literature on both the rationale and the methodology of program evaluation. Representative of recent contributions are the efforts of Anderson and Ball (1978), Anderson, Ball, Murphy, and Associates (1973), Astin (1970a; 1970b; 1974), Baird (1977), Balderston (1974), Bowen (1974; 1977), Cooley (1976), Dressel (1972; 1976), Feldman (1970), Fincher (1978a; 1978b; 1979), Folger (1977), Hartnett (1971), Lenning, Lee, Micek, and Service (1977), Miller (1979), Pedazur (1975), and Rock, Centra, and Linn (1969), to cite but a few. While much of the literature on program evaluation has focused upon the assessment of "general education" and "major field" processes and outcomes, it is also evident that remedial education programs have become the subjects of serious, scholarly attention (Baldwin and others, 1975; Carman, 1971; Cosby, 1975; Cross, 1976; Dumont, Jones, and Bekus, 1982; Entwistle, 1960; Gordon, 1970; Grant and Hoeber, 1978; Maxwell, 1979; Presco, 1978; Roueche, 1973, 1977; Sharon, 1970; Trillin and Associates, 1980; and Zwick, 1965).

Although a variety of methodological approaches to and techniques of summative evaluation have been reported in the literature (Akst and Hecht, 1980), including multiple-indicator and multiple-design approaches (Dumont, Jones, Bekus, 1982), the potential advantages or benefits of discriminant analysis have yet to be realized, particularly with regard to formative evaluation.

Discriminant analysis is a statistical procedure which is an extension of multiple regression analysis, and which is applicable in situations where the

dependent variable may represent the nominal level of measurement. It allows the assignment of individuals to two or more categories or groups based upon information on two or more variables.

The basic and applied aspects of discriminant analysis have been emphasized by Klecka in terms of the technique's capabilities with regard to both *analysis* and *classification*: "The *analysis* aspects of the technique provide several tools for the interpretation of data. . . The weighting coefficients serve to identify the variables which contribute most to differentiation along the respective dimension (function)." And, "The use of discriminant analysis as a *classification* technique comes after the initial computation. Once a set of variables is found which provides satisfactory discrimination for cases with known group memberships, a set of classification functions can be derived which will permit the classification of new cases with unknown memberships" (Klecka, 1975, pp. 435-436).

Data Sources

The data for the study are derived from a project designed to evaluate the effectiveness of remedial education programs in mathematics, composition and reading within a statewide system of higher education in the Southeastern United States. The project is sponsored by the system governing board, and it was initiated in the Fall of 1979 as a pilot effort involving one of the system's six regional universities and one of its ten community colleges. The project was expanded in the Fall of 1981 to include two additional community colleges.

At each participating institution, a multiple-indicator and multiple-design summative evaluation strategy has been adopted, utilizing both short- and long-range post-program measures. In the interest of a reasonably parsimonious presentation, this article deals with the remedial programs at but one of the institutions, a regional university of approximately 5000 students.

An SPSS file has been developed which contains the records of first-time freshmen enrolled in remedial education courses in mathematics, composition and reading in the Fall Quarter of 1979. Data are available on such predictor variables as age, sex, race, entering ability as assessed by ACT scores and scores on "local" subject matter (mathematics, composition and reading) achievement pretests, posttests and gain scores, as well as on performance in subsequent related courses. Additionally, attitudinal data were gathered *via* self-administered questionnaires given both at the beginning and at the end of the remedial courses. Factor analyses applied to Likert-type items yielded two distinct, strong and quite consistent factors upon pretest, "Perceived Usefulness of Course" and "Confidence in Ability to Master the Subject Matter," and one factor upon posttest, "Perceived Usefulness of Course." Summaries of the results of the factor anaylses of the attitudinal items appear in Tables 6 through 8 for the remedial courses in mathematics, composition and reading, respectively.

Analyses

In order to explore both the explanatory and predictive aspects of discriminant analysis, and especially their potential for formative evaluation, five separate

analyses utilizing SPSS "Subprogram Discriminant" were applied to our data. In each analysis, the two groups which were the subjects of discriminant analysis were the successfully remediated and the non-successfully remediated students, and the *analysis* was intended to identify those demographic, performance and attitudinal variables which accounted for success or failure of remediation. The *classification* technique was subsequently applied in order to predict the likelihood of success as a result of remediation.

The first three analyses utilized a *short-range postprogram measure* of successful remediation, namely, successful completion of the remedial course through earning a grade of C or better. These analyses were conducted for the three program areas of mathematics, composition and reading.

The last two analyses were conducted for mathematics and composition only, and they utilized a *long-range postprogram measure* of successful remediation, that is, successful completion of next related course through earning a grade of C or better. Reading was excluded from this portion of our inquiry due to the difficulties of identifying clearly what the next related course was or should be. No such ambiguity was encountered with regard to mathematics and composition, since sufficient numbers of students enrolled in the next related course within a required sequence during the winter quarter of 1980.

The variables, which were entered into the several discriminant analyses in a stepwise fashion according to the variables' "discriminating power" as determined by the method of Wilk's *lambda* (see Kiecka, 1975, pp. 446-448), and the discriminant groups were as follows for each of the five analyses.

ANALYSIS I

Remedial Mathematics

Discriminant groups:

1. Students earning grades of D or F in remedial mathematics course;

2. Students earning grades of A, B or C in the course.

Variable Entered:

Sex Coded as a dummy variable: 0=Female; 1=Male.

Age as of September, 1979. Coded as actual age in years.

Race Coded as a dummy variable: 0=Black; 1=White.

ACT Math Subtest Score.

ACT Composite Score.

Math Pretest Score. On a faculty-developed mathematics achievement test administered at the beginning of the remedial course.

Quarter Hours, Fall 1979. Total number of quarter hours for which student was enrolled while taking the remedial mathematics course.

Perceived Usefulness of Remedial Mathematics Course. Student's score on this attitudinal variable as assessed at the beginning of the remedial course. See Table 6 for the attitudinal statements and their factor loadings.

Confidence in Ability to Master Mathematics. Student's score on this attitudinal variable as assessed at the beginning of the remedial course. See Table 6 for the attitudinal statements and their factor loadings.

ANALYSIS II

Remedial Composition

Discriminant Groups:

1. Students earning grades of D or F in remedial composition course.

2. Students earning grades of A, B or C in the course.

Variables Entered:

Sex

Age

Race

ACT English Subtest Score

ACT Composite Score

Composition Pretest Score. On a faculty-developed composition achievement test administered at the beginning of the remedial course.

Quarter Hours, Fall 1969

Perceived Usefulness of Remedial Composition Course. See Table 7 for the attitudinal statements and their factor loadings.

Confidence in Ability to Master Composition. See Table 7 for the attitudinal statements and their factor loadings.

ANALYSIS III

Remedial Reading

Discriminant Groups:

1. Students earning grades of D or F in remedial reading course.

2. Students earning grades of A, B or C in the course.

Variables Entered:

Sex

Age

Race

ACT Social Studies Reading Subtest Score

ACT Composite Score

Reading Pretest Score. Score on Nelson-Denny test of reading ability administered at the beginning of the remedial course. Coded as actual reading grade level.

Quarter Hours, Fall 1979

Perceived Usefulness of Remedial Reading Course. See Table 8 for the attitudinal statements and their factor loadings.

Confidence in Ability to Master Reading. See Table 8 for the attitudinal statements and their factor loadings.

ANALYSIS IV

Post-Remedial Mathematics Course

Discriminant Groups:

1. Students earning grades of D or F in non-remedial mathematics course;

2. Students earning grades A, B or C in the course.

Variables Entered:

Sex

Age

Race

ACT Math Subtest Score

ACT Composite Score

Math Pretest Score: Score on "local" faculty-developed mathematics achievement test administered at the beginning of the remedial course.

Math Posttest Score: Score on "local" faculty-developed mathematics achievement test administered at the end of the remedial course.

Math Test Gain Score: Posttest-Pretest gain score on "local" faculty-developed mathematics achievement test.

Quarter Hours, Winter 1980: Total number of quarter hours for which student was enrolled while taking the next mathematics course.

Perceived Usefulness of Remedial Mathematics Course: See Table 6 for the attitudinal statements and their factor loadings.

ANALYSIS V

Post-Remedial Composition Course

Discriminant Groups:

1. Students earning grades of D or F in non-remedial mathematics course;

2. Students earning grades of A, B or C in the course.

Variables Entered:

Sex

Age

Race

ACT English Subtest Score

ACT Composite Score

Composition Pretest Score: Score on "local" faculty-developed composition achievement test administered at the beginning of the remedial course.

Composition Posttest Score: Score on "local" faculty-developed mathematics achievement test administered at the end of the remedial course.

Composition Test Gain Score: Posttest-Pretest gain score on "local" faculty-developed mathematics achievement test.

Quarter Hours, Winter 1980.

Perceived Usefulness of Remedial Composition Course: See Table 7 for the attitudinal statements and their factor loadings.

Results

Selected results of the discriminant analysis applied to the remedial mathematics course are presented in Table 1. The data reveal the emergence of a distinct and statistically significant factor, consisting of three variables predictive of successful remediation. In order of importance, as revealed by their standardized canonical discriminant function coefficients, the variables are Math Pretest Score (.84), Perceived Usefulness of Course (.39), and Race (.38). Therefore, students who score higher on the "local" faculty-developed mathematics achievement test, who have a more positive attitude about their need for and usefulness of the course, and who are white are more likely to be successfully remediated. That these variables in combination have great predictive potential is revealed through an examination of the classification results of Table 1, where 85% of all cases are correctly classified.

Other variables included in our analysis, but which did not emerge as being predictive of successful remediation in mathematics were Sex, ACT Math Subtest Score, ACT Composite Score, Age, Confidence in Ability to Master Mathematics, and the Quarter Hours for which the student was enrolled.

What are the implications of the above findings from the perspective of formative evaluation? While answers to this question are more appropriately formulated by the faculty and administrators of the subject institution keeping in mind the specific circumstances, clientele, and institutional goals and human and fiscal resources, the data *might* suggest the desirability of identifying a cutoff source on the mathematics achievement test which could be utilized for admissions and/or advising purposes, an advisory or orientation program for students aimed at heightening their awareness of the importance of the remedial course for their collegiate and life-long success, and careful consideration of the possibility of developing ways to better serve the needs of black students.

Table 2 displays the findings of the discriminant analysis applied to the remedial composition course. Once again, a discriminating factor has emerged, although it is neither as distinct nor as statistically significant as that which was observed for the remedial mathematics course. In order of importance, the predictive variables are Age (.63), Confidence in Ability to Master Composition (.61), Sex (.53), Composition Pretest Score (.42), Perceived Usefulness of Course (.42) and Race (.34). Apparently, more variables are relevant to successful prediction with regard to composition than to mathematics. Successful remediation is more likely if the student is an older female, has an attitude of confidence in her writing ability, scores high on the "local" faculty-developed composition test, and has a positive attitude about her need for and usefulness of the remedial composition course. Although not quite as impressive as the classification results for remedial mathematics, the 76% of cases correctly classified for remedial composition is clearly suggestive of a high degree of predictability.

According to our data, ACT English Subtest Scores, ACT Composite Scores, and the Quarter Hours for which the student was enrolled did not appear to be predictive of successful remediation in composition.

Possible recommendations for program improvement are similar to those suggested for mathematics: need for identifying a cutoff score on the composition test, for an advisory or orientation program aimed at improving attitudes about the usefulness or importance of the remedial course and for exploring ways to better serve the needs of black students. In addition,

attempts to improve students' confidence in their writing ability and to better respond to the needs of males and younger students might also be indicated. Again, these are properly matters of institutional responsibility and initiative, based upon realistic appraisal of resources, costs and potential benefits.

The results of the discriminant analysis applied to the remedial reading course appear in Table 3. The factor which emerges is less distinct and statistically significant than that for mathematics, but more so than for the composition course. While there are important similarities in predictor variables identified in case reading as in the cases of mathematics and composition, there are some interesting differences as well. Similar to the findings we have already reviewed, and in order of their importance, Reading Pretest Score (.79) and Perceived Usefulness of Course (.55) are revealed as important predictor variables, and the associated recommendations regarding cutoff scores and attitudinal improvement measures would appear to be indicated. Unlike the situation with regard to mathematics and composition, however, race does not appear to be significantly related to successful remediation in reading. An interesting finding is the fact that students scoring lower on the ACT Social Studies Reading Subtest Score are more likely to be successfully remediated. While several equally plausible explanations for this finding might be offered, including regression toward the mean, perhaps the most convincing might be that which argues that the ACT Subtest Score is not a "true" measure of reading ability, since it also assesses knowledge of social science subject matter.

As was true with both mathematics and composition, a high degree of predictability is to be discerned, with 79% of the cases correctly classified, based upon the predictor variables.

The three discriminant analyses that we have reviewed thus far have all been based upon a common short-range postprogram measure or definition of successful remediation, that is, earning a grade of C or better in the remedial course. And, while there were important differences in the results, scores on "local" faculty-developed pretest and positive attitudes about the usefulness of the course were important predictor variables across the three subject matter areas. Additionally, race was shown to be important for success in remedial mathematics and remedial composition. Equally important and somewhat surprising was the general finding that, with a minor and not clearly interpretable exception, ACT Subtest and Composite Scores did not emerge as variables strongly predictive of successful remediation.

We turn now to consider the results of those two discriminant analyses involving the long-range postprogram measure of successful remediation, namely successful completion of next related course. We shall be particularly interested in discovering whether the patterns we have reviewed are persistent or whether they are changing, and, whether indeed, discriminant factors are revealed at all.

Table 4 displays the results of the discriminant analysis applied to the next mathematics course. While a distinct, discriminating factor is discernable, it is not as statistically significant as any we have reviewed thus far, and it also contains fewest predictor variables. In order of discriminating power, the predictor variables are ACT Composite Score (.81) and the Quarter Hours for which the student was enrolled while taking the next mathematics course (.50). That the predictability based upon these two factors alone is substantial is indicated by the results of the classification analysis, showing 75% correct assignments of students into the failure and success categories.

When these results are compared to those of our discriminant analysis applied to the remedial mathematics course, some interesting differences are to be observed. Specifically, none of the previously important demographic, ability/performance or attitudinal variables emerge as predictors of success in the next mathematics course. Apparently, once students are successfully remediated in the sense of earning a C grade or better in the remedial course, any potential disadvantages based upon sex, race, attitude about the course, confidence in ability, and the like, cease to be of importance in the next course. Additionally, it is interesting, that while the ACT Composite Score, a traditional and powerful predictor of collegiate success, did not emerge as a significant predictor for the remedial course, it is clearly the dominant predictor variable in the present analysis. Our findings also suggest that students enrolled on a full-time basis have a greater probability of success in the next mathematics course.

The results of the discriminant analysis applied to the next composition course are displayed in Table 5. They reveal a very strong and statistically significant factor. While the analysis shows important similarities to that pertaining to the next mathematics course, there is also one interesting difference. Like the immediately preceding analysis, an ACT Score (English Subtest) is the most important predictor, with a coefficient of .96, with the quarter hours for which the student was enrolled being the next important predictor with a coefficient of .63. Somewhat puzzling, however, is the -.35 coefficient for the variable of race, which suggests that blacks realize slight advantage in their likelihood of successfully completing the next composition course. This finding is clearly inconsistent with those discussed earlier and admits of no ready explanation.

That the predictive power of the discriminant function and associated variables for the next composition course is great is clearly revealed by the classification results, which show a full 87% of all cases correctly classified.

Summary and Conclusions

Our results are suggestive of the potential utility of discriminant analysis in formative evaluation studies of remedial education programs. At a regional university in the Southeastern United States, we discovered that the application of discriminant analysis to remedial courses in mathematics, composition and reading yielded distinct and statistically significant factors with important discriminating variables, each providing concrete indications for programmatic improvements. Further applications to the subject institution involving additional and larger samples, and to other institutions should allow for a more informed and comprehensive appreciation of the technique's potential applications for the evaluation of remedial programs.

Table 1:

Selected Results of Discriminant Analysis Applied to Students (N=48) Enrolled in Remedial Mathematics at a Regional University During the Fall Quarter of 1979.

SUMMARY TABLE

STEP	ACTION ENTERED	REMOVED	WILKS' LAMBDA	SIGNIFICANCE LEVEL
1	Math Pretest Score		.581692	.0000
2	Perceived Usefulness of Course		.510888	.0000
3	Race		.472870	.0000

CANONICAL DISCRIMINANT FUNCTIONS

FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILKS' LAMBDA	CHI-SQUARED	D.F.	SIGNIFICANCE LEVEL
1	1.11475	.7260372	.4728699	30.332	3	.0000

STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1
Race	.38215
Math Pretest Score	.84392
Perceived Usefulness of Course	.39459

CLASSIFICATION RESULTS

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 GRADE OF D OR F	17	16 (94.1%)	1 (5.9%)
GROUP 2 GRADE OF A, B OR C	31	6 (19.4%)	25 (80.6%)

PERCENTAGE OF GROUPED CASES CORRECTLY CLASSIFIED: 85.42%

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Table 2:

Selected Results of Discriminant Analysis Applied to Students (N=58) Enrolled in Remedial Mathematics at a Regional University During the Fall Quarter of 1979.

SUMMARY TABLE

STEP	ACTION ENTERED	REMOVED	WILKS' LAMBDA	SIGNIFICANCE LEVEL
1	Composition Pretest Score		.925725	.0506
2	Race		.880490	.0442
3	Sex		.851950	.0510
4	Confidence in Ability		.829032	.0612
5	Age		.794784	.0534
6	Perceived Usefulness of Course		.766254	.0518

CANONICAL DISCRIMINANT FUNCTIONS

FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILKS' LAMBDA	CHI-SQUARED	D.F.	SIGNIFICANCE LEVEL
1	.30505	.4834728	.7662541	12.513	6	.0514

STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1
Sex	-.53326
Race	.34107
Age	.62924
Composition Pretest Score	.42056
Perceived Usefulness of Course	.41999
Confidence in Ability	.61321

CLASSIFICATION RESULTS

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1			
GRADE OF D OR F	8	5 (62.5%)	3 (37.5%)
GROUP 2			
GRADE OF A, B, OR C	50	11 (22.0%)	39 (78.0%)

PERCENT OF GROUPED CASES CORRECTLY CLASSIFIED: 75.86%

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Table 3:

Selected Results of Discriminant Analysis Applied to Students (N=39) Enrolled in Remedial Mathematics at a Regional University During the Fall Quarter of 1979.

SUMMARY TABLE

STEP	ACTION Entered	Removed	WILKS' LAMBDA	SIGNIFICANCE LEVEL
1	Perceived Usefulness of Course		.778449	.0025
2	Age		.722318	.0029
3	Reading Pretest Score		.697595	.0051
4	ACT Scoial Studies Reading Subtest Score		.630207	.0028
5		Age	.644872	.0014

CANONICAL DISCRIMINANT FUNCTIONS

FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILKS' LAMBDA	CHI-SQUARED	D.F.	SIGNIFICANCE LEVEL
1	.55070	.5959261	.6448721	15.574	3	.0014

STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1
ACT Social Studies Reading Subtest Score	-.82775
Reading Pretest Score	.78679
Perceived Usefulness of Course	.54889

CLASSIFICATION RESULTS

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 GRADE OF D OR F	9	6 (66.7%)	3 (33.3%)
GROUP 2 GRADE OF A, B OR C	30	5 (16.7%)	25 (83.3%)

PERCENT OF GROUPED CASES CORRECTLY CLASSIFIED: 79.49%

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Table 4:

Selected Results of Discriminant Analysis Applied to Students (N=24) Enrolled in the Next Mathematics Course in the Quarter Immediately Following Completion of Remedial Mathematics at the Regional University, Winter, 1980.

SUMMARY TABLE

STEP	ACTION Entered	Removed	WILKS' LAMBDA	SIGNIFICANCE LEVEL
1	ACT Composite Score		.849781	.0613
2	Quarter Hours, Winter, 1980		.810509	.1101

CANONICAL DISCRIMINANT FUNCTIONS

FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILKS' LAMBDA	CHI-SQUARED	D.F.	SIGNIFICANCE LEVEL
1	.23379	.4353058	.8105089	4.4120	2	.1101

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1
ACT Composite Score	.80814
Quarter Hours, Winter, 1980	.49765

CLASSIFICATION RESULTS

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 GRADE OF D OR F	7	6 (85.7%)	1 (14.3%)
GROUP 2 GRADE OF A, B OR C	17	5 (29.4%)	12 (70.6%)

PERCENT OF GROUPED CASES CORRECTLY CLASSIFIED: 75%

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Table 5:

Selected Results of Discriminant Analysis Applied to Students (N=31) Enrolled in the Next Mathematics Course in the Quarter Immediately Following Completion of Remedial Mathematics at the Regional University, Winter, 1980.

SUMMARY TABLE

STEP	ACTION Entered	Removed	WILKS' LAMBDA	SIGNIFICANCE LEVEL
1	ACT English Subtest Score		.535492	.0000
2	Quarter Hours, Winter, 1980		.457858	.0000
3	Race		.436016	.0001

CANONICAL DISCRIMINANT FUNCTIONS

FUNCTION	EIGENVALUE	CANONICAL CORRELATION	WILKS' LAMBDA	CHI-SQUARED	D.F.	SIGNIFICANCE LEVEL
1	1.29349	.7509887	.4860160	21.997	3	.0001

STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1
Race	-.35201
ACT English Subtest Score	.95986
Quarter Hours, Winter, 1980	.63241

CLASSIFICATION RESULTS

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP 1	2
GROUP 1 GRADE OF D OR F	11	10 (90.9%)	1 (9.1%)
GROUP 2 GRADE OF A, B OR C	20	3 (15.0%)	17 (85.0%)

PERCENT OF GROUPED CASES CORRECTLY CLASSIFIED: 87.10%

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Table 6:

Summary of Factor Analysis Results for Attitudes of Students Enrolling in the Remedial Mathematics Course at the Regional University in the Fall Quarter, 1979.

Factors and Associated Attitudinal Statements	Factor Loadings on Varimax Rotated Factor Matrix for Attitudinal Statements Administered:	
	Beginning of Remedial Mathematics Course	End of Remedial Mathematics Course
"Perceived Usefulness of Course" Factor		
"I will improve (or have improved) my skills in mathematics as a result of taking this course."	.71	.69
"This course will help me in my other academic work."	.83	.73
"This course will help me in my academic program or major."	.79	.75
"This course will be (or was) a waste of time."	-.69	-.75
"This course will help me later in life."	.51	.46
"Confidence in Ability" Factor		
**"How do you estimate your performance in your high school math courses?"	.51	NA*
**"How do you estimate your ability to do college-level math compared with other students at this university?"	.76	NA*
"I have confidence in my ability to do mathematics."	.68	NA*
"My skills in mathematics are already adequate to do college-level work."	.70	NA*
"I expect to do well in this course."	.60	NA*

*No meaningful Confidence in Ability factor was identified as a result of analysis of the attitudinal posttest.

**These items utilized the following response format: 1. Well below average; 2. Below average; 3. Average; 4. Above average; 5. Well above average. All other items involved: 1. Strongly disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly agree.

Table 7:

Summary of Factor Analysis Results for Attitudes of Students Enrolling in the Remedial Composition Course at the Regional University in the Fall Quarter, 1979.

Factors and Associated Attitudinal Statements	Factor Loadings on on Varimax Rotated Factor Matrix for Attitudinal Statements Administered:	
	Beginning of Remedial Composition Course	End of Remedial Composition Course
"Perceived Usefulness of Course" Factor		
"I will improve (or have improved) my skills in writing as a result of taking this course."	.69	.68
"This course will help me in my other academic work."	.67	.67
"This course will help me in my academic program or major."	.69	.49
"This course will be (or was) a waste of time."	-.81	-.64
"This course will help me later in life."	.57	.80
"Confidence in Ability" Factor		
**"How do you estimate your writing performance in your high school courses?"	.70	NA*
**"How do you estimate your ability to do college-level writing compared with other students at this university?"	.56	NA*
"I have confidence in my writing ability."	.53	NA*
"My writing skills are already adequate to do college-level work."	.60	NA*
"I expect to do well in this course."	.45	NA*

*No meaningful Confidence in Ability factor was identified as a result of analysis of the attitudinal posttest.

**These items utilized the following response format: 1. Well below average; 2. Below average; 3. Average; 4. Above average; 5. Well above average. All other items involved: 1. Strongly disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly agree.

Table 8:

Summary of Factor Analysis Results for Attitudes of Students Enrolling in the Remedial Reading Course at the Regional University in the Fall Quarter, 1979.

Factors and Associated Attitudinal Statements	Factor Loadings on Varimax Rotated Factor Matrix for Attitudinal Statements Administered: Beginning of Remedial Reading Course
"Perceived Usefulness of Course" Factor	
"I will improve my reading skills as a result of taking this course."	.53
"This course will help me in my other academic work."	.47
"This course will help me in my academic program or major."	.98
"This course will be a waste of my time."	.41
"This course will help me later in life."	.60
"Confidence in Ability" Factor	
**"How do you estimate your reading performance in your high school courses?"	.44
**"How do you estimate your ability to do college-level reading compared with other students at this university?"	.66
"I have confidence in my ability to understand the materials I read."	.61
"My reading skills are already adequate to do college-level work."	.76
"I expect to do well in this course."	.35

*Attitudinal posttest results were not factor analyzed since these would only be useful for a discriminant analysis of performance in the next related course. As discussed in the text, such analysis was not feasible for the remedial reading program.

**These items utilized the following response format: 1. Well below average; 2. Below average; 3. Average; 4. Above average; 5. Well above average. All other items involved: 1. Strongly disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly agree.

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A Study of the Correlation of Selected Data on High School Transcripts, English Qualifying Examination Scores, and Subsequent Freshman/Developmental English Grades at Wytheville Community College

Jerry R. Beavers

Statement of the Problem/Rationale for the Study

The primary problem which this study is attempting to solve is to find existing data that can be used to place students in first-quarter English classes where their probability of success will be high. The college offers two first-quarter college-level English courses—English 101 (Communication Skills I) and English 111 (English Composition I). English 101 is primarily for students enrolled in an occupational-technical program and English 111 is for students who intend to transfer to a four-year institution.

Wytheville Community College has an open admissions policy and enrolls a large number of students who have been out of high school for several years. Consequently, its entering students have a wide range of English skills and many of them are not prepared to enter English 101 or 111. When it is determined that a student is not prepared to enter English 101 or 111, he or she is required to take developmental English courses. English 01 (Verbal Studies Laboratory) and English 08 (Reading Improvement) are developmental courses for students who lack preparation in English. These courses are designed to develop basic skills and understandings needed to succeed in college-level courses. They are not offered for college-level credit, are personalized, and may be completed in varying lengths of time.

For a number of years, the college sought an assessment instrument that was satisfactory for evaluating whether or not a student was prepared to enter English 101 or 111. In January of 1982, WCC adopted the *English Qualifying Examination (Revised 1978)*, developed by the English faculty of the Annandale Campus of Northern Virginia Community College, as such an instrument and made the exam mandatory for all students wishing to enter English 101 or 111 after the 1982 Spring Quarter. A study conducted by this researcher in March 1983, showed that there was significant correlation between English Qualifying Exam (EQE) scores and grades received in English 101 and 111 by two hundred twenty-seven WCC students during the 1982 Fall Quarter. The findings of that study seemed to indicate that the college had found a suitable instrument for placing students in English 101 or 111. However, the EQE also

produced some undesirable results. Many potential students resented having to take the EQE in order to enroll in English classes at WCC, an open admissions community college, when they could enroll at four-year institutions without it. This created a public relations problem with some public school officials, parents, and students. In addition, administering the exam and recording and distributing the scores required a great deal of staff time. Therefore, the president of the college asked the Office of Institutional Research to conduct a study to identify existing data that would be suitable for placing students in English 101 and 111 in order to avoid the problems associated with the EQE.

A secondary problem which this study attempts to solve is to find existing data that can be used to project the number of quarters that will be required for a student to complete developmental English courses. As previously stated, developmental English courses are personalized and consequently completed in varying lengths of time. Some students require only one quarter to complete these courses while others require two quarters or more (only about 5% require more than two quarters). In order to properly plan instructor workloads for these courses, a suitable instrument that can be used to project the number of quarters each student will require to complete English 01 and 08 is needed. The aforementioned study which this researcher conducted in March 1983, showed that there was significant correlation between EQE scores and the number of quarters required to complete developmental English courses. However, the previously mentioned problems associated with the EQE seemed to outweigh the potential benefits that might be realized for this purpose. Therefore, it became necessary to search for a suitable alternate predictor.

Limitations of the Study

The scope of this study is limited to the identification, review, and analysis of data on high school transcripts of WCC students which might be suitable for placing students in English 101 and 111, and for projecting the number of quarters students will require to complete developmental English courses.

Significance of the Study

The significance of this study is that it could identify *existing* data that would be suitable for placing students in English 101, 111, and developmental English at WCC and thereby allow the college to avoid the problems which it has encountered with the EQE. In addition, it could identify existing data that would be suitable for projecting the number of quarters that WCC students will require to complete developmental English courses. If successful, this will enable the college to more accurately plan instructor workloads for English classes without administering the EQE.

This researcher also feels that it is significant that this study was conducted at the request of the college president in response to a current institutional problem. One of the common complaints of institutional researchers is that too often our work only collects dust on the shelf and has no influence on the decision-making process of our colleges. This type of study is more likely to have its findings and recommendations utilized in the decision-making process and to gain visibility and build credibility for the Office of Institutional Research than those lacking administrative involvement.

This study also has implications for other community colleges that are located in areas where the SRA Assessment Survey is regularly administered to eleventh grade students. Since most community colleges offer the equivalent of English 01, 08, 101, and 111, it should be easy for other institutional researchers to duplicate this study and determine whether or not SRA scores are suitable for placing students in English courses at their institutions.

Methodology

After discussing available statistical methods with other researchers and a statistics professor, this researcher concluded that the computation and comparison of Pearson's (product-moment) correlation coefficient (r) of EQE scores, data on high school transcripts, and subsequent freshman/developmental English would be the best method of determining whether or not a suitable alternate predictor was available. For the purposes of this study, if the correlation coefficient of the dependent variables being tested and any item on high school transcripts of our students is as high as that of EQE scores, then an existing alternative predictor would be considered as available.

A review of a sample of high school transcripts from the schools in the WCC service region revealed that all but a few of the transcripts of recent graduates entering WCC contained eleventh grade SRA scores, and all contained twelfth grade English grades. A perusal of the SRA score report made it evident to this researcher that the weighted scores for the composite, reading, and language arts components would more likely be correlated with performance in college English than would other available data. Availability and likelihood of correlation were the factors which led to the selection of these data as independent variables for this study.

The Statistical Analysis System (SAS) was used to compute (r) of EQE scores, twelfth grade English grades, SRA composite scores, SRA reading scores, SRA language arts scores and grades received for English 101 and 111. The same process was also used to compute (r) of the above scores/grades and the number of quarters required to complete English 01 and 08.

SAS was also used to compute the arithmetic mean (X) of EQE scores, SRA scores, and twelfth grade English grades for students earning each of the passing grades awarded for English 101 and 111 in order to help identify appropriate cutoff scores for placing students in these courses. The same procedure was used to compute the mean of the above data for students who completed English 01 and/or 08 during the 1982 Fall Quarter and for those requiring more than one quarter to complete these courses.

A detailed analysis of the range and correlation of the independent variables of this study was conducted in order to determine what affects, if any, that range might have on correlation. In order to facilitate this analysis, the independent variables were assigned numerical rankings according to both range and degree of correlation. A comparison was then made of the two sets of rankings.

The independent variables for all four computations of the correlation coefficient were EQE scores, twelfth grade English grades, SRA composite scores, SRA reading scores, and SRA language arts scores. The dependent variables for the first two computations were grades received for English 101 and 111 at WCC during the 1982 Fall Quarter. The dependent variables for the other two computations were the number of quarters required to complete English 01 and 08.

In order to compute the correlation coefficient of EQE scores, SRA scores, and English grades, it was necessary to convert letter (alphabetic) grades to numeric values. Therefore, an "A" grade was given the value of four (4), a "B" grade was given the value of three (3), a "C" grade was given the value of two (2), a "D" grade was given the value of one (1), and "F" grades were converted to zeros (0). Final grades of "W" were not considered in this part of the study.

In the computation of the correlation coefficient of EQE scores, SRA scores, twelfth grade English grades, and the number of times required to complete English 01 and 08, the following procedure was used. If a student received a grade of "S" (satisfactory completion) at the end of the 1982 Fall Quarter, he or she was assigned a value of one (1). This meant that the student completed the course in one quarter. If a student received a grade of "R" (making progress but needs to reenroll), "U" (unsatisfactory progress), or "W" (withdrawal), he or she was assigned a value of two (2). This meant that it would take the student two (or more) quarters to complete the course. The numeric values of one (1) and two (2) were then used in the computation formula along with the previously described independent variables.

Findings

The findings of this study are presented in Tables 1 through 6. Table 1 shows that SRA language arts scores, SRA composite scores, and twelfth grade English grades have a higher degree of correlation with grades received for English 101 than EQE scores and that SRA language arts scores and SRA composite scores have a higher degree of correlation with grades received for English 111 than EQE scores.

Table 2 shows that SRA composite scores, SRA reading scores, and twelfth grade English grades have a higher degree of correlation with the number of quarters required to complete English 01 than EQE scores and that SRA composite scores and SRA reading scores have a higher degree of correlation with the number of quarters required to complete English 08 than EQE scores.

Tables 3 and 4 show the mean scores of the independent variables for each of the passing grades awarded for English 101 and 111 for the 1982 Fall Quarter.

Tables 5 and 6 show the mean scores of the independent variables for those who required only one quarter to complete English 01 and/or 08 and for those who required 2 or more quarters to complete these courses.

The analysis of range and correlation revealed no consistent connection between the two in this study. While the size of the range varied a great deal, the numerical rankings of the range of the five independent variables were almost the same for each of the dependent variables. SRA composite scores had the largest range for all four dependent variables, both SRA reading and language arts scores ranked fourth each time, and high school English grades had the smallest range in each instance. A comparison of rank according to degree of correlation can be made by reviewing Tables 1 and 2. These tables show that SRA composite scores have the highest correlation with two dependent variables and rank second twice. SRA reading scores rank second twice and last twice. SRA language arts scores rank first twice, fourth once and last once. EQE scores rank third twice and fourth twice. High school English grades rank third twice, fourth once, and last once.

Summary and Recommendations

SRA language arts scores have the highest degree of correlation with grades received for English 101 and 111, therefore they are considered to be the best available predictor of performance in these courses. If we accept the premise that the students who completed English 101 and 111 are typical of those who will enroll in these courses, and that a grade of "C" (or higher) is indicative of success, then the mean SRA language scores for those who made "C" (406 for English 101 and 420 for English 111) should be appropriate cutoff scores for placing students in English courses where they have a high probability of success.

SRA composite scores have the highest degree of correlation with the number of quarters required to complete English 01 and 08, therefore SRA composite scores are considered to be the best predictor of the number of quarters that will be required to complete these courses. If we accept the premise that the students who completed English 01 and 08 during the 1982 Fall Quarter are typical of those who will enroll in these courses, then the mean SRA composite score for those who completed these courses in one quarter (479 for English 01 and 482 for English 08) should be appropriate cutoff scores for predicting whether or not students will be able to complete these courses in one quarter.

Since this study was conducted in response to a current institutional problem and at the request of the college president, it is more likely than others lacking these conditions, to have its findings and recommendations utilized in the decision-making process of the college and to gain visibility and build credibility for the Office of Institutional Research.

In view of the findings of this study and the previous study by this researcher on correlation of EQE scores and grades received for English 101 and English 111, the following recommendations seem appropriate:

1. That the EQE not be required of students who have eleventh grade SRA scores.
2. That placement of WCC students in English 101 and 111 be based on eleventh grade SRA language arts scores in instances where they are available.
3. That a weighted score of 406 (on SRA language arts) be established as the cutoff score for placement in English 101. Students scoring lower than 406 should be required to enroll in developmental English.
4. That a weighted score of 420 (on SRA language arts) be established as the cutoff score for placement in English 111. Students scoring lower than 420 should be required to enroll in developmental English.
5. That the EQE continue to be required of WCC students wishing to enter English 101 and 111 in instances where he or she is unable to provide the college with SRA scores.
6. That the EQE cutoff score for placement in English 101 be raised from 26 to 28. Students scoring lower than 28 should be required to enroll in developmental English.
7. That the EQE cutoff score for placement in English 111 remain at 30. Students scoring lower than 30 should be required to enroll in developmental English.

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Table 1.

Correlation Coefficient (r) of EQE Scores, Selected Data on High School Transcripts, and the Grades Received for English 101 and 111.

	r For EQE SCORES	N	r For HIGH SCHOOL ENGLISH GRADES	N	r For SAT COMPOSITE SCORES	N	r For SAT READING SCORES	N	r For SAT LANG. ARTS SCORES	N
ENGLISH 101	.44444	96	.50242	73	.53402	55	.43011	53	.37531	93
ENGLISH 111	.44396	141	.39340	122	.41480	61	.30230	91	.45380	91

Table 2.

Correlation Coefficient (r) of EQE Scores, Selected Data on High School Transcripts, and the Number of Times Required to Complete English 01 and 08.

	r For EQE SCORES	N	r For HIGH SCHOOL ENGLISH GRADES	N	r For SAT COMPOSITE SCORES	N	r For SAT READING SCORES	N	r For SAT LANG. ARTS SCORES	N
ENGLISH 01	-.53709	82	-.41090	44	-.52221	12	-.51870	14	-.29121	34
ENGLISH 08	-.37701	59	-.28002	40	-.38180	29	-.44805	29	-.33530	29

Table 3.

Arithmetic Mean (X) of EQE Scores, Selected Data on High School Transcripts, and Passing Grades Received for English 101.

PASSING GRADE	X For EQE SCORES	N	X For HIGH SCHOOL ENGLISH GRADES	N	X For SAT COMPOSITE SCORES	N	X For SAT READING SCORES	N	X For SAT LANG. ARTS SCORES	N
A	33	9	3.000	9	599	1	466	1	473	1
B	33	36	3.000	33	543	10	439	10	464	10
C	28	35	2.683	30	491	33	411	33	458	60
D	27	13	1.667	9	482	8	403	8	370	8

Table 4.

Arithmetic Mean (X) of EQE Scores, Selected Data on High School Transcripts, and Passing Grades Received for English 111.

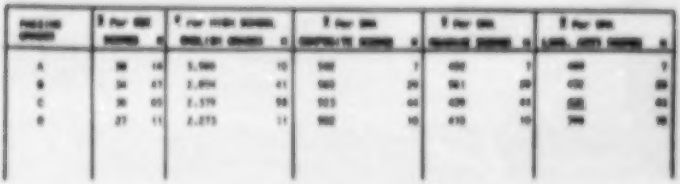


Table 5.

Arithmetic Mean (X) of EQE Scores, Selected Data on High School Transcripts, and the Number of Times Required to Complete English 01.

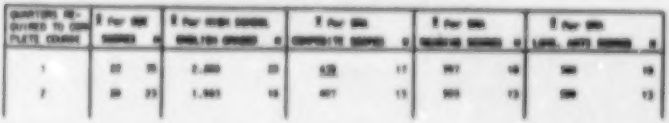
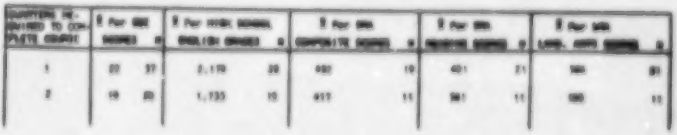


Table 6.

Arithmetic Mean (X) of EQE Scores, Selected Data on High School Transcripts, and the Number of Times Required to Complete English 08.



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Research in the Field

(Editor's Note: "Research in the Field" is a new feature which will appear regularly in the journal. It contains abstracts of articles that have been submitted either to the journal or to the ERIC Clearinghouse, on topics of a general research nature which may be of value to many researchers. The name and address of the author is included for those who would like to obtain a copy of the complete article. We hope that you will find in this section, something that you can use in your research activities.)

Abstracts by:
Beverly Horne
Jefferson Community College, Louisville, KY 40201

Computerized Testing and Feedback for Faculty and Curriculum Development

Hejia Wheeler, Santa Fe Community College
Gainsville, FL 32602

Santa Fe Community College has implemented a system that combines computer test generation with a feedback program designed to improve instructional quality. The new procedures are also credited with gains in curriculum and faculty development.

Ten core courses were identified and developed through the following stages: (1) content development, (2) final examination development, (3) adoption of test bank program, (4) examination administration and grading, (5) analysis of results, and (6) faculty review of test analysis. Thus each instructor focused on the same major objectives, chose his or her own examination from the test bank, and received test results and analysis the day after administering the examination.

Items included in the test analysis were used to improve the quality of the examination and to help the faculty assess their teaching and examination writing abilities. In addition, the computer results provided a breakdown of each student's performance, by instructor and course topic covered on the examination.

Santa Fe Community College will continue to improve and expand the computerized testing program. It has, however, already garnered widespread support among faculty and administrators who believe that the system will be of great benefit to the college.

Institutional Management and Research: an Essential Partnership in Two-Year Colleges

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Institutional research can be defined as a systematic, comprehensive self-study by a college, designed to improve the institution. A sound institutional research program should generate information concerning students, learning processes, educational practice, institutional environment and the impact of the school on the community.

More and more two-year colleges are now relying on their institutional research departments to identify and analyze problems. Utilized in such a manner, research can help improve current programs and operations as well as provide an accurate data base for long-range planning decisions.

The important distinction between research and planning should be observed but research directors need to work closely and cooperatively with those who have primary responsibility for planning. By establishing closer links between the institutional research department and management, colleges can help insure a better education for their students.

Public Support and Confidence in Higher Education: A National Perspective

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This study presents a comparison of the results of several statewide surveys regarding public attitudes toward postsecondary education to a 1982 national study, "American Attitudes Toward Higher Education." The findings from the surveys were remarkably consistent and the following conclusions were formulated:

1. there exists widespread support and approval of higher education;
2. minorities, more so than whites, view college education as the preferred path to upward mobility;
3. federal and state aid to education is considered a high priority item;
4. continued federal support in the form of loans, grants, and special assistance is desired;
5. more respondents indicate willingness to increase taxes or financial support to colleges if improved quality would result;
6. postsecondary institutions are expected to play a major role in economic recovery and should continue specialized research in the fields of science and medicine.

The surveys cited in this article clearly indicate that support for higher education is not regionalized among Americans and that citizens continue to believe strongly in the value of a college education.

AACJC REPORT:
Occupational Education Enrollments

Rosemary Wohlers

Among educators in community, technical, and junior colleges, it is a well-known fact that enrollments have shifted dramatically from transfer programs to occupational, developmental, and community education programs. Today the proportion of students enrolled in occupational programs stands at about 70 percent. Therefore, it is important to take a close look at the types of occupational programs the 4.96 million credit students are participating in.

In the fall of 1982, the AACJC conducted a survey in which colleges were asked to show enrollments in 75 generic occupational areas such as "agriculture" and "electronic technology." The data does not provide enrollment figures for all of the vocational education programs available at community colleges. It is clear that the data needs to be refined and expanded if the "total picture" is to be presented.

Over 1200 institutions were surveyed and the data reflects a sampling of the returns.

The 1982 Top Occupational Education Programs by Credit Enrollment

1. Data Processing
2. Business Management
3. Nursing
4. Secretarial Science
5. Accounting
6. Electronic Technology
7. Business Computer Programming
8. Police Science/Security
9. Human Services
10. Engineering Technology

It is important to note that several high-technology offerings are not among the above listed, such as, robotics, micro computers and nuclear medicine. The enrollments in these programs are relatively small. However, the AACJC does have the capacity to identify which institutions offer such programs.

A similar survey was conducted in the fall of 1981 and the same 1200 institutions were surveyed. Although the types of programs rated in the top ten remained almost the same, it is interesting to note the shift among the computer science offerings. Data processing replaced business management as the number one field, and business computer programming moved higher in the rankings. The only program that did not remain in the top ten was education/special education. It was replaced by human services.

The 1981 Top Occupational Education Programs by Credit Enrollment

1. Business Management
2. Data Processing
3. Nursing
4. Accounting
5. Secretarial Science
6. Electronic Technology
7. Police Science/Security
8. Engineering Technology
9. Business Computer Programming
10. Education/Special Education

The National Center for Education Statistics conducted in 1980 a special analysis on occupational education programs in two-year colleges. The types of programs identified are slightly different from the AACJC surveys, but the results add another dimension since it would be impossible to establish a trend based on the two AACJC surveys alone.

NCES Special Analysis 1980 (Top Ten)

1. Merchandising
2. Real Estate
3. Nursing
4. Child Care & Guidance
5. Accounting and Computing
6. Programming
7. Other Business Data Processing
8. Filing, Office Machines, General Office
9. Stenographic, Secretarial & Related
10. Supervisory & Admin. Management

I would like to take this opportunity to thank our colleges for their cooperation in returning the data to the AACJC. Both surveys were mailed with our annual *Directory* questionnaire form, and without their continued assistance we would be unable to answer questions presented by students, counselors, and others interested in occupational education.

Literature for Researchers

Darrel Clowes, Editor

Academic Strategy: The Management Revolution in American Higher Education

George Keller, Johns Hopkins University Press, Baltimore, Maryland, 211 pp., 1983.

Reviewed by Carla Witte, Texas Christian University, Forth Worth, Texas.

The word "strategy," says author George Keller, comes from the Greek verb "stratego," meaning to plan the defeat of one's enemies through the effective use of resources. In *Academic Strategy*, Keller attempts to map a plan for the future survival of American higher education. He charges from the outset that a new style of management is vital if the 3100 existing American colleges and universities hope to even be around in the next decade. It is this new style of management which Keller tries to describe and prescribe to the reader.

Academic Strategy is divided into two parts. In Part I the author cites statistics concerning colleges which recently have found themselves in serious economic quandaries. This lays the groundwork for the author to trace the beginnings and growth of higher education in this country. He examines the organizational structures which have evolved, the financial support systems, student and faculty concerns, administrative styles, and projections for the future if institutions continue operating as they currently are. Keller paints a grim picture for some colleges, but the reasons he cites for the major shifts in higher education are not new. Most readers are aware that the 18-year-old population is declining, the white birth rate is dropping, the minority birth rate is increasing, and that adults are now the increasing population of college-going students. The ubiquitous computer makes it obvious that the new technology will have enormous implications for our classrooms, our information systems, and our research methods. Other factors that will play a role in the future of education include the increase in competition within higher education for students, the demise of the traditional liberal arts curriculum in exchange for the specialized vocational programs of study, and the decline of younger people entering the university teaching ranks. True? Yes. But news? Hardly.

After introducing these considerations, the author spends the remainder of Part I describing in a case study format new management approaches used at selected institutions. He also examines the state of planning theory and practice, not only within academic institutions, but also in the business and industry sector.

Part II, then, is intended to define strategic planning, how it differs from traditional planning methods employed by higher education, and the methods of implementing it at one's own institution. This is the supposed climax for the book. The reader has poured over half the book to get the background necessary to appreciate and understand the author's definition of strategic planning.

One would expect Part II to begin with the revelation of the much-touted strategy, but instead the book continues in the same manner as Part I. The author states that "before embarking on the formulation of strategies" an institution must prepare itself for "the longer, more difficult voyage." He suggests that administrators must examine the information about their campus to see if they really know the status of internal operations, curriculum, faculty, students, chief competition, trends in the environment outside the institution and analysis of cost data. The quality of the institution must be examined in every area possible. And the people who work within the academic setting must be innovative, from the top administrators to the general staff.

After laying this groundwork, does the author finally draw back the curtain and unveil the strategy? No. He continues with a litany of what academic strategy is not. Finally, after the reader has gone three-quarters of the way through the tome, the first glint of a definition appears on the horizon. But the author muddies the conceptual waters by stating that strategic planning cannot be explained in a definition, but rather described as to how it is set apart from systems analysis, management science, or long-range planning. There are six features: it is active rather than passive in its approach; competitive; action-oriented, concentrating on decisions rather than plans and goals; participatory, with a blending of politics and psychology; forward moving, with the institution's survival of the utmost importance; and most importantly, looking beyond the present to keep in step with the constantly changing environment.

Keller says administrators must formulate goals with an awareness of how well the institution can achieve these goals and how these programs will be beneficial to the environment. Whatever program one chooses to initiate, the institution must analyze itself first, to reach an understanding of its traditions and values, its academic and financial strengths and weaknesses, and the capabilities of its leaders. Once its internal merits are considered, the external forces must then be examined. Forecasting must be conducted in areas such as technology, sociology, and the economy. Marketing approaches must be considered as opposed to selling or advertising. Competing institutions and their programs must be studied.

Simply stated, strategic planning involves moving one's institution ahead to insure survival with programs of benefit to the external environment by utilizing and building upon internal resources. The style or approach utilized by the administration to achieve its goals must be forward moving with these points in mind. Once more the question arises. True? Yes. But news? No.

The author has spent a great deal of time researching the book. Excellent examples of universities, their leaders and their various approaches are used throughout to illustrate his points. The bibliography is extensive; the forward by Carnegie-Mellon University president, Richard Cyert, is impressive.

Perhaps for those at institutions which have stood still in time, Keller's points of internal and external factors in a participatory fashion will be viewed as revolutionary. For others, this book may add new insights. But most readers will fail to find the promised revolutionary prescription of a management style that will enable administrators to more effectively meet the challenges for American higher education which lie ahead.

Rational Decision-Making in Higher Education

Ellen Earle Chaffee
National Center for Higher Education Management Systems
Boulder, Colorado

Reviewed by Marilyn Burgess, Director, Sensa Educational Systems, Fort Worth, Texas

Author Ellen Earle Chaffee defines the rational model of decision-making in higher education as a "conscious choice made by a central authority among simultaneously displayed alternatives." She relates "rational" decisions to the reader within the larger context of values as expressed in stated goals in this 85-page book (one in a six-part, National Center for Higher Education Management Systems' Executive Overview Series).

In practice, the decision-making process is not likely to follow the pattern of any single model. The process may be best described from one's perspective. Models are, however, useful analytic devices that serve categorical needs, according to this writer.

The orderly description of models is outlined in detail in Chapter one. Chapter two offers a realistic case study of the rational method as used at Stanford University. Chapter three presents issues for administrators interested in improving the organization's rational decision-making ability.

Believing that participants in the decision-making process need conceptual tools for analyzing and modifying their organizational behavior, the book explains the process in simple, non-technical language. The five tables in Chapter one clearly describe each of the following models:

1. Rational model: deciding by reasoned problem solving;
2. Collegial model: deciding by consensus;
3. Political model: deciding through conflict resolution;
4. Bureaucratic model: deciding by structured interaction patterns; and,
5. Organized anarchy: deciding by accident.

Each model examines "decision elements," "characteristics," and "implications."

Two appendixes ("Annual Operating Budget Cycle" and "Results of the Stanford Budget Study") appear to have been added as an afterthought to the coverage of rational decision-making. However, the bibliography is extensive and includes general references along with specific listings for each decision model. Therefore, this book seems to be a valuable reference, not only for students who are studying administrative paradigms and/or budgeting, but for administrators who need practical information rooted in empirical studies.

Overeducation in the U.S. Labor Market.

Russell W. Rumberger, Prager Publishers, New York, 1981

Reviewed by Marion Asche, Associate Professor, Virginia Tech, Blacksburg, Virginia.

The concept of overeducation as a widespread condition is enigmatic to conventional wisdom in the American society. More education is the way to get ahead. More education helps for the economy through development of human capital. More education builds better bodies and minds and citizens! The popular faith that education is the primary path upward and out of whatever

undesirable condition an individual or nation is in has only slightly abated in recent years.

Increasing numbers of writers, however, are beginning to question at least some forms and levels of education as a public and/or private investment. The present work by Rumberger joins this list but with two specific delimitations. First, as the title indicates, educational payoffs are examined within the U.S. Labor market; more specifically, the level of placement of individuals within that market. Secondly, Rumberger delimits his investigation to general educational levels and does not consider specialized education or training. Thus, debates on the relative worth of such programs as vocational education are avoided.

The primary methodology used is to examine the relationship of the general educational level of the population and four sub-groups (Black and White Males and Females) to the skill requirements of their jobs in 1960 and 1976. These comparisons are also made for inexperienced workers and are related to educational level.

First, what is overeducation? Rumberger reviews three approaches to definition: (1) Diminishing pecuniary return, (2) Unrealized expectations and (3) Underuse of acquired educational skills. An extensive rationale for use of any or all three definitions is provided but the third, underuse of developed skills, is adopted for the analyses and interpretations which follow.

Four research questions are posed: (p. 59)

1. How have the general skill requirements of the jobs in the U.S. economy changed between 1960 and 1976?
2. How have the educational attainments of the work force changed during this same period?
3. Has there been a growing discrepancy between these two and, if so, in what direction?
4. How has the relationship between the years of overeducation and education itself changed over this period, both on the aggregate level and for young, inexperienced workers?

As a background before addressing the methodology and findings of the study, Rumberger provides a very readable, concise discussion on theoretical explanations of overeducation. Orthodox (Human capital, screening, job competition) and Heterodox (Labor market segmentation) labor market theories are discussed in terms of their implications for the concept of overeducation. This section is particularly worthwhile for the reader who is less than proficient in "Econ-speak."

To address the study's questions, two types of data at two points in time were required. First, information on workers (occupation, earnings, hours, industry, race, sex, age and years of schooling) for 1960 were obtained from the 1/1000 Public Use Sample of the 1960 Decennial Survey, U.S. Bureau of the Census. The 1976 worker data was drawn from the March, 1976 Current Population Survey. The second type of data was information on jobs. The third (1965) and fourth (1977) editions of the *Dictionary of Occupational Titles* were used to determine the required general educational development (GED) levels for occupations during the two time periods. Rumberger provides a detailed discussion of problems and assumptions involved in making these sets of data compatible.

Several analyses were conducted. First, distributions of GED levels and educational attainments in both 1960 and 1976 were estimated. In addition to

the aggregate distributions, a number of disaggregated distributions were estimated based on race-sex groups, occupational groups and occupational experience levels. These distributions enable one to characterize level and change in job requirements and worker characteristics. The second analysis task was estimating the degree of discrepancy between the education attainments of workers and the skill requirements (GED) of jobs. Positive discrepancy (overeducation) was viewed at the two points in time as well as in relation to educational level and work experience for the aggregate and subpopulations.

There are several findings that should be of interest to post-secondary educators. The overall shifts in the employment composition and changes in skill requirements of existing jobs between 1960 and 1976 resulted in the movement of the aggregate distribution of skill requirements toward the middle and upper middle range and away from both low and high skill ends of the range. There was a decrease in the proportion of jobs requiring the highest and the lowest levels of general educational development (GED levels 6 and 1 respectively). As would be expected, there was a substantial upward shift in years of schooling completed by members of the labor force between 1960 and 1976.

Comparisons of the 1960 and 1976 distributions of the GED requirements of jobs with the educational attainment levels of workers revealed little shift in skill requirements (except at the extremes of the distribution) but substantial upward shifts in educational levels indicated in general an increase in overeducation for the aggregate population. Disaggregated distributions (Black and White males, Black and White females) revealed discrepancies in the incidence and rate of change in overeducation among these groups.

The relationship of level of education to the incidence of overeducation was assessed through regression analyses for each of the defined sub-populations. Results indicated that higher levels of overeducation go along with higher levels of education in all groups. In fact, all of the lower (less than 12 years of education) groups were characterized as being undereducated, raising some questions about either the methodology or the assignment of GED levels to specific occupations by the DOT. In terms of change, white males became more overeducated, black males, less overeducated; white females, more, and black females, less overeducated in 1976 than in 1960. Among workers with graduate training, both black and white workers became more overeducated. Regressions among inexperienced workers produced similar but more pronounced results. A final analysis section used similar techniques to examine projections of overeducation to the year 1985 with similar findings to the 1960-1976 period.

The final sections examine implications of overeducation in the workplace and for public and private policy. First, proposed "logical" consequences in the areas of job dissatisfaction, work performance, worker health and adverse workplace behavior are examined through a brief review of literature. Although the review points to possible ill effects of overeducation, it does not deal specifically with general education as defined by Rumberger nor provide much convincing evidence of causality.

Finally, public and private policy implications are discussed. Although Rumberger points out a number of possible policy initiatives in each area, he concludes that private industry and business will initiate only such reforms as will insure or increase profitability while the government will make only minor

adjustments in policy. In other words, overeducation will probably continue, only slightly affected by policy initiatives.

Discussion

One could write a book titled "Underemployment in the U.S. Labor Market." It would be the same book, using the same data and analyses but perhaps having somewhat less of a suggestion that such a phenomenon is inevitable under Capitalism. Perhaps it is not trite to ask whether we have a problem of overeducation or one of underemployment?

Rumberger has done a commendable job of describing all manner of problems in building the necessary data sets and the many sources of potential bias inherent in such a process. It appears that individually each problem is either unresolvable due to the nature of the data or is of minor consequence in relation to the whole. There remains, however, a vague feeling that all these gremlins might not be random and might choose to march together.

A much more significant problem, however, appears in the area of delimitations rather than limitations. These delimitations may have severely limited the study's value. The education that is suspect by it's overabundance is general educational level (years of schooling). The assessment of job requirements is delimited to the general educational development levels provided by the DOT. The DOT assignment of GED levels to occupations is an attempt to identify required minimum skill levels in reasoning, mathematical and linguistic development based generally on two observations in each of two states for each cataloged occupation. The jump from skills level to years of general education has been made by a number of researchers with widely varying results. If the effectiveness of schools is diminishing as some contend, perhaps there is little overeducation after all - only overschooling.

Assuming there is "overeducation" in the general years of schooling sense, one could either conclude (depending on political philosophy) that the Federal government should get out of education and let free market forces take over or that the economy should be stimulated and the private sector pressured to provide jobs which more adequately tap the reservoir of unused skills. Perhaps overeducation in the general sense has little to do with work but is really an indication of how an affluent society and individuals choose to spend money and time resources. Perhaps the education that has to do with work and which should be cast against labor market requirements is the specialized education which unfortunately is omitted from the present study.

I think anyone who reads this book will be stimulated to think about the important issues it raises. Most of us will wind up quoting Rumberger and incorporating some of the findings into our world view. As educators, we will at the same time be secretly disagreeing with the concept of overeducation but perhaps with less empirical evidence than has been marshalled by Rumberger.

AN ERIC REPORT:
Economic Impact Studies

by Jim Palmer

Community colleges and other public institutions are sometimes viewed only as large expenditure objects on beleagured state budgets. In times of fiscal constraint, it is often forgotten that the colleges provide individuals and local communities with economic benefits worth far more than the funds expended on the colleges themselves. As a result, several colleges and state college systems are attempting to determine the actual economic impact of postsecondary institutions.

The following citations represent a selection of the documents in the ERIC database that discuss the economic impact of community colleges. The full text of these and other ERIC documents can be ordered through the ERIC Document Reproduction Service (EDRS) in Arlington, Virginia, or obtained on microfiche at over 730 libraries across the country. Please write the Clearinghouse for an EDRS order form and/or a list of the libraries in your state that have ERIC microfiche collections.

The Economic Impact of SUNY Community Colleges.

Analysis Paper No. 823

Albany, NY: State University of New York, Office for Community Colleges, 1982. 6 pp. (ED 223 283).

A complete assessment of the impact of community colleges should not only focus on primary college missions, but also on the economic impact of the colleges on their local communities and the state. In calculating the economic impact of the community colleges of the State University of New York (SUNY), three assumptions should be made: (1) expenditures by the colleges and their members and revenues and services generated by the colleges' presence have a significant impact on the local economy; (2) in most cases, SUNY community colleges that conducted formal impact studies (less than 50% of the schools) found that they had an annual positive economic impact that approximated their annual budget; and (3) statewide economic impact is impossible to measure since most dollars spent in conjunction with college operations originate and remain in state. An individual college seeking to determine its economic impact should systematically estimate the financial transactions of the college itself and its faculty, staff, and students. The most basic of these estimates are first-round impact measures. In the public sector, these should take into account government funds and services, monies charged back to

other counties, and taxes paid by the college and its constituents. In the private sector, data should be collected on the direct expenditures of the college and its members. Estimates should also be made of the secondary impact of college expenditures with respect to employment opportunities, secondary deemed for goods and services, and additional taxes paid by businesses and their employees. Impact studies provide evidence for taxpayers and legislators to justify investment in community colleges.

Kinnick, Mary K. (Ed.)

Oregon Community College Economic Impact Study: A Guidebook.

Gresham, OR: Mt. Hood Community College, Office of Research, 1982. 84 pp. (ED 222 233).

Based on the experience of developing and implementing a cooperative study of the economic impact of Oregon's community colleges, this guidebook describes the process of conducting the study in order to assist institutions planning to undertake similar investigations. In Part I, the purpose, focus, and scope of the Oregon study are reviewed, and the possible advantages and disadvantages considered prior to its implementation are cited. Key factors in the early planning phase are examined in Part II, including sponsors, staff enthusiasm, scheduling, control and coordination, and team selection. This section also identifies hindrances encountered during the study, including insufficient lead time; disagreement about economic impact models; and the outdatedness and limited applicability of existing models. Part II concludes by discussing options for further studies. Part III details study methodology, focusing on initial planning at state and college levels, data collection and processing, and final study review by a consortium of college representatives. Part IV discusses the dissemination of study findings through press releases, in-house publications, other college informational materials, and reports to college boards. This section also cites the study's achievements in supporting and defending the community colleges, creating a case study procedure, and establishing a cooperative model for Oregon community colleges. Appendices include a bibliography, survey instruments, and informational materials.

Littlefield, William N.

The Economic Impact of the Long Beach Community College District, Fiscal 1981.

Long Beach, CA: Long Beach City College, 1982. 78 pp. (ED 227 919).

The study described in this report employed the Caffrey and Isaacs model to assess the economic impact of the Long Beach Community College District on the local community. Following a summary of research findings, the report reviews the Caffrey and Isaacs model and two additional economic impact studies. Next, the report considers the relationship between producing and consuming entities using a circular flow diagram and looks at sources of district funding and faculty/staff residence patterns. Figures are then presented showing the primary impact (i.e., immediate consequences of college expen-

ditures on personal income, retail sales, and employment) and induced impact (i.e., increases stimulated by the primary impact) of the college. Next, the effect of the school on local banks' credit base is assessed. After impact results using the Caffrey and Isaacs model are presented, the indirect impact of a community college education is measured in terms of the increased productivity of students, local personal incomes, retail sales, and employment. Discussions of the impact of the District on other local government units and on the reduction of poverty and unemployment conclude the report. Data tables showing income and sales ratios, estimates of the value of the community college education for Long Beach and other urban California areas, and comparisons with data from a statewide impact study of Illinois community colleges are included in the appendices.

Lucas, John A.

Economic Impact of Harper College on Its Community — 1980-1981. Volume XI, Number 22.

Palatine, IL: William Rainey Harper College, Office of Research and Planning, 1982. 22 pp. (ED 226 801).

Using a model developed by the Illinois Community College Board (ICCB), William Rainey Harper College (WRHC) conducted a study to determine the economic impact of the school on its community by its presence, the business it transacts, the employees it hires, and the students it attracts to the campus. Data, gathered from a variety of college and community sources, were compared with data from six other community colleges in Illinois which have piloted the economic impact model. Selected study findings include the following: (1) for every dollar of local tax revenue raised by the college, $6.25 was generated in college-related business, $5.00 was produced in value of local business property, $1.33 was channeled into expansion of local bank credit base, and $3.00 of personal income was produced; (2) 2,816 full-time jobs existed as a result of WHRC; (3) $2.7 million of outside government money, including benefits and grants paid directly to students, was channeled directly into the community; (4) more than 12% of the adult population has been enrolled each year at WHRC; (5) approximately 45,000 community residents came to the campus for cultural arts events or to use college facilities or services. Data tables contrasting the economic impact figures for WHRC with those for the College of DuPage and with an average calculated for six additional Illinois colleges are included. Work pages from the ICCB-produced handbook are appended.

Schimmelpfenig, H. R.

A Study of the Economic Impacts of Bismarck Junior College Upon the Local Community.

Bismarck, ND: Bismarck Junior College, 1983. 93 pp. (ED 229 057)

Outlining both methods and results, this report describes Bismarck Junior College's (BJC's) use of the American Council on Education's model for assessing the short-term, current impacts of a college on local business volume. After

chapters 1 and 2 discuss the value and focus of economic impact studies, chapter 3 describes BJC in terms of its history, mission, facilities, tax base, financial support, faculty and staff, students, enrollments since 1939, and community center. Next, chapters 4 and 5 review the objectives and theoretical base of the study. Chapter 6 details the methods used to calculate college-related business volume, value of local business property committed to college-related business, and expansion of the local lending institutions' credit base. After chapter 7 provides directions for surveying students and staff to determine their expenditures, chapter 8 presents data in 48 categories, including total college expenditures; staff salaries and residence patterns; housing and non-housing expenditures of students and staff; assessed property value; expenditures of visitors to the campus; bank deposits of the school and its staff; the consumer price index; and population trends. Then, chapter 9 explains the computations used to calculate these figures. Finally, chapter 10 summarizes findings.

Stevenson, Mike.

The Impact of Community Colleges on Oregon's 1980-81 Economy.

Gresham, OR: Mount Hood Community College, 1982. 93 pp. (ED 222 232)

A statewide study was conducted in 1982 to describe the impact of Oregon's 15 community colleges on the state's economy as well as the impact of each college on the economy of its district. Economic impact was defined for the study as the money in circulation within the state or college district due to the existence of the college; i.e., college-related business volume. Surveys were administered to students and staff to ascertain their college related expenditures and whether these were made in-district, in-state, or out-of-state. Additional data on college expenditures for payrolls and the purchase of goods and services were obtained from college records. Economic impact was then assessed in terms of money in circulation, money in circulation compared with operational tax dollars, jobs created, and enrollment alternatives. The study revealed that: (1) while Oregonians invested over $102 million in the community colleges through state and local taxes, the colleges returned over five times that amount ($552,990,662) to circulation in the economy; (2) 35,999 full-time equivalent jobs were attributable to the colleges; and (3) without the colleges, approximately 43,629 residents would not have attended college in winter term, 1982. Appendices provide the survey instruments and findings on the impact of each community college on its district's economy and a discussion of the statewide socioeconomic and educational impacts of the college.

Webster, Barbara, and others

Gainesville Junior College Community Impact Study/Needs Assessment Inventory.

Gainesville, GA: Gainesville Junior College, 1980. 356 pp. (ED 200 264).

Procedures, methodology, and findings are reported for a six-part study undertaken by Gainesville Junior College (GJC) to: assess the economic impact of

the college on its service area; determine community attitudes concerning the degree to which GJC has met stated goals and objectives; and identify needed services and programs that GJC has yet to provide. Part I of the report examines the economic impact of the college, based on a model designed to assess college-related business volume, college-related expenditures, expansions of area bank credit as a result of college-related deposits, the amount of local property taxes paid by faculty and staff, the personal income of area residents employed at GJC, and the durable consumption of those employees. Parts II thrugh VI describe the purposes, procedures, and findings of five community surveys: (1) interviews with 91 recognized community leaders; (2) a survey of area high school seniors and counselors; (3) a telephone survey of 952 randomly selected GJC alumni; (4) a survey of GJC administrators, faculty, and staff; and (5) a survey of 400 GJC students. Among other items, the surveys solicited information on: awareness of GJC programs and services; community problems and needs; community attitudes toward the quality of GJC programs and services; and areas in which GJC could improve. Survey instruments are appended.

ERIC Abstracts:

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Document Resume

ED 223 308 JC 820 556

The Reverse Transfer Student: An Emerging Population

Renkiewicz, Nancy K.; And Others
Los Rios Community College, District Office, Sacramento, CA 95825

ABSTRACT
As part of a statewide investigation of the reverse transfer student, a study of students transferring from four-year colleges and universities to community colleges was conducted in the Los Rios Community College District. The study sought to determine the relative size of the reverse transfer population; differences in the characteristics of reverse transfers and other students; and reasons students left the four-year colleges or transferred laterally from one community college to another. Questionnaires were sent to 11,210 students at the three Los Rios colleges, requesting information on background, enrollment influences, educational attainment and plans, and prior college attendance. Based on responses from 10,196 students, or 22% of the total district student population, the study revealed that: (1) 19.6% of the respondents were reverse transfer students, including both four-year college graduates and non-completers; 25.7% had previously attended a community college; and 54.7% had no prior college experience; (2) 82.4% of the four-year college graduates and 69.6% of the first-time students were employed; (3) 11.7% of the four-year college graduates and 56% of the first-time students were enrolled for 12 units or more; and (4) four-year non-completers left the four-year college mainly for financial reasons or uncertainty about their major, while two-year lateral transfers left their previous college primarily because of a change in job or residence. A literature review and the survey instrument are included. (HB)

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Document Resume

ED 224 518 JC 820 566

Research Findings of Employer Needs Assessment Survey.

Debra Williamson
Florence-Darlington Technical College, Florence, SC 29501

ABSTRACT
In spring 1981, Florence-Darlington Technical College (FDTC) conducted a needs assessment survey of employers in Darlington, Dillon, Florence, and Marion Counties in South Carolina to collect information that would allow the college to respond more positively to employment and training needs in its service area. The study sought to encourage greater communication with local industry; to determine discrepancies between employment needs and FDTC's programs; to solicit input for determining educational priorities; and to gather opinions and ideas that would be useful in revising programs. A total of 174 firms, employing 30,467 workers, were surveyed. Study findings, based on responses from 70% of the firms and on subsequent on-site interviews with 26 large companies employing more than 250 workers, indicated: (1) 89% of the respondents were familiar with programs at FDTC; (2) 77% reported that they seldom or never employed FDTC graduates, though 92% indicated that they would be willing to do so; (3) 67% felt that job opportunities in their firm for FDTC graduates were good or very good; (4) FDTC training was considered to adequately prepare graduates for their jobs by 88% of the employers who rated the training; and (5) the skills perceived by the employers as most necessary for FDTC graduates were ability to operate and take care of equipment, and a knowledge of safety habits. Employers' recommendations for program improvement and the survey instrument are included. (HB)

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Document Resume

ED 225 782 JC 830 075

Measuring the Impact of Student Assessment on Institutional Quality.

Miami-Dade Community College, John Losak, Office of Institutional Research
Miami, FL 33176

ABSTRACT
Assessment programs which have recently been implemented in colleges around the country, have indirectly affected the quality of education in ways that are both researchable and measurable. Admissions and placement testing affect educational quality by separating high and low achievers, and making it possible for high-level texts to be used and advanced discussions to take place with high achievers. However, neither testing method ensures instructional quality in the classroom. Exit examinations, on the other hand, have a more direct impact on quality, in that they require that the curriculum be geared to provide the knowledge to be tested at the exit point and that instructors teach at the level to be tested. While exit examinations should not be used as the basis for awarding or denying degrees, they can and should be used to

monitor the curriculum by sampling student achievement on exit exams and providing feedback to faculty. The effects of implementing assessment programs on educational quality can be measured in terms of institutional climate before and after their implementation and in terms of changes in areas such as type of student attracted to the institution, and graduation and transfer rates. Because the literature suggests that the high institutional expectations result in high student performance, minimum skills testing, which represents low-level expectations, should be avoided in favor of achievement tests, representing higher expectations. (DAB)

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The editorial board of *The Community College Journal for Research and Planning* request readers to submit manuscripts of research studies that relate to the broad range of research and planning topics.

The editors offer the following suggestions to potential contributors:

Style

1. Follow the APA Style Guide.
2. Provide appropriate charts and illustrations.
3. Use a clear direct writing style.
4. Use current research material.
5. Include bibliographic references, if appropriate.

Types of Articles

1. Application or discussion of research and planning methodologies.
2. Articles on interest to planners, researchers and policy makers.
3. Creative approaches to research and planning problems.
4. Point-Counter Point approaches.
5. Issue Oriented articles.
6. Application of research and/or planning tools.
7. Trends and controversies in planning and/or research.
8. State of the art applications.

The editorial board will review all manuscripts and recommend to the Editor acceptance, revision or rejection.

PURPOSE

The *Community College Journal for Research and Planning* provides a forum for the exchange of information among members of the association and among professional colleagues in the field of research and planning. The *Journal* is multi-purpose and diverse in its articles and information; however, it is unified in its purpose to be of service to professionals working in the field of Community College research, management and planning.

The *Journal* is designed to provide an outlet for research and discussion on issues important to community college researchers and planners. It also serves as an information source for all elements of higher education interested in institutional management. The *Journal* meets a need to communicate the findings and achievement of research and planning professionals concerned with issues of concern to community colleges.

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